

SOCIETY of MANUFACTURING ENGINEERS

TORONTO CHAPTER 26

FEBRUARY 2002



<http://www.sme-toronto-26.org/>



Talk: High Speed Machining - Principles

Speaker: Vince D'Alessio, Elliott Matsuura Canada Inc.

This month we highlight equipment needs - to contrast with focussing on tooling at last month's talk.

Wednesday February 20, 2002

Joint meeting with the Canadian Mold Makers Association & the CTMA

Cash Bar at 5:30, Dinner 6:00 pm, Talk at 7:00 pm

Giorgio D Ristorante, 4377 Steeles Ave West, Downsview, ON, 416 661-8989

www.giorgiod.com/giorgio/main.html

The Talk: High speed machining has become a loosely used term in today's metal cutting industry. This presentation will begin with a short explanation on the principles behind high speed cutting with specific information on materials and applications best suited for this technology.

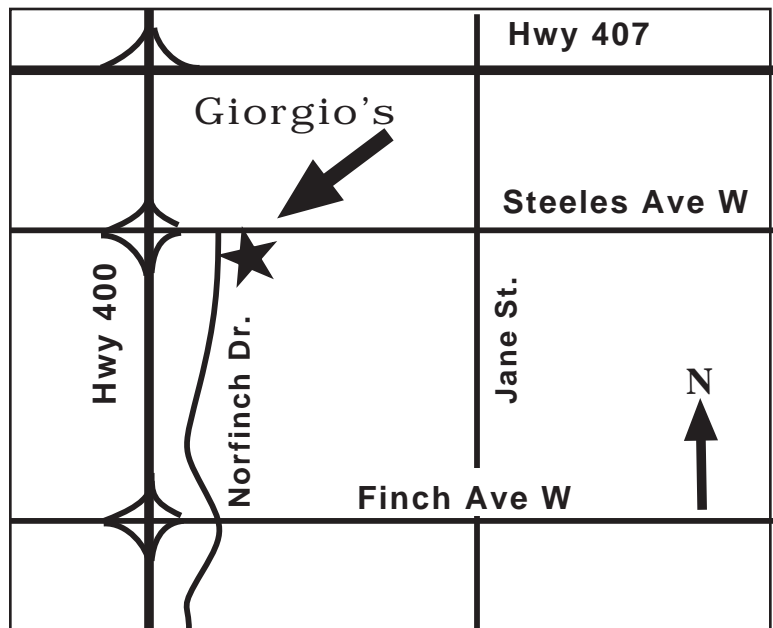
High speed cutting is more than just surface speed and material. Other factors are required to obtain the true benefits of the technology. The presentation will include information on machine structures, spindle designs/configurations, control requirements and tool holder/cutting tool considerations.

Actual cutting examples will be available for display during the presentation.

Company: Elliott Matsuura Canada Inc. is the largest Machine Tool importer/distributor in Canada employing approx. 60 people including direct sales, direct after service support & service and Application Engineering. It is a wholly owned subsidiary of Matsuura Machinery Corporation, Japan, manufacturers of high quality machining centers with many years of experience in the area of high speed machining products. Since 1990 Elliott Matsuura have installed over 100 high speed machining centers in Canada.

Elliott Matsuura Canada Inc., 2120 Buckingham Road., Oakville, Ontario, L6H 5X2. Phone: 905-829-2211. See www.elliottmachinery.com

\$30 for members (CMMA & CTMA included), \$35 for non-members and \$20 for students



Speaker: Vince D'Alessio is the Sales Director at Elliott Matsuura with approx. 20 years experience in the metal cutting industry.

Register today for this event with **Loris Giuricich 416-448-2225**, Lgiurici@celestica.com or **Ken Kogej 416-402-3146**, Ken-dante.msn@atccanada.net

Our theme for the year: FUTURE GROWTH AREAS IN MANUFACTURING

We are seeking:

VOLUNTEERS to help run the Chapter. Please get in touch with Joe Benedetto, if you can spare a little time, 416-267-2102 or jrbene@attglobal.net

PROGRAM/TALK/TOUR SUGGESTIONS. We want to offer talks and tours of interest to our members. If you have a suggestion please get in touch with George Heintzman, 416-467-8298 or gheintzman@sympatico.ca

Kiwanis Honours Buell Manning: Scholarship Award to a Central Technical School Student

I received a phone call from our 1964 SME Past Chair, Buell Manning, an SME Life Member since December 1944. He sends his regards to all our SME Executives and Committee Members for our continued dedication to SME and our excellent work.

He informed me that he was honoured for his 58 years of dedication in Kiwanis activities in November, 2001, at Central Technical School's Commencement & Awards Night by a \$4000/year Buell Manning Scholarship to be awarded each year to a Central Technical School Student.

FYI, Buell graduated with honours in Grade 12 Electrical, and went on to becoming President of AC Wickman Co. and retired after they pulled out of Canada from the UK.

Joe Benedetto
jrbene@attglobal.net

Your Company Flyer Bulletin Enclosure Opportunity

Chapter 26 is offering companies the opportunity to enclose their company flyer in our monthly Bulletin mailing. The piece to be included must meet the following criteria:

- 500 folded flyers ready for stuffing into a #10 envelope supplied by 1 week after copy deadline.
- Is of interest to our membership - is manufacturing oriented (we don't want life insurance or travel brochures)
- Weighs less than 3 sheets of 8.5 x 11 in 20 lb bond paper. Larger items could be negotiated.

We reserve the right to reject pieces we do not feel to be consistent with our professional goals and objectives. Our mailing list is currently over 400 manufacturing professionals. The current price is \$300 per issue. We reserve the right to change any of the above items without prior notice. For more information please get in touch with George Heintzman, 416-467-8298 or gheintzman@sympatico.ca

THIS SEASON: Topics & Schedule

2002

Wednesday, February 20. Talk, High Speed Machining, Elliott Matsuura Canada Inc

Wednesday, March 6. Tour, Honda through their Car plant in Alliston. 6:30. PM . Limit: 30 people.

Wednesday, April 3. Talk, Stephen Armstrong, AMGI Management Consultants Inc.

Wednesday, May 1. Tour TBA

Wednesday, June 5. RP Overview and Update Panel

Bulletin Copy Deadlines

NOTE: Send material to Jenny Ono Suttaby at jono@jentekcompany.com by the following dates for inclusion in the upcoming Chapter Bulletin:

March Issue: February 10, 2002

April Issue: March 10

May Issue: April 7

June Issue: May 7

Executive Meetings

EXECUTIVE MEETINGS 6:30 pm START: 2002

Thursday, February 28, 115 Brookside Ave, 6:30 pm

Thursday, March 21

Thursday, April 11 EXECUTIVE PLANNING MEETING, 28 Kildeer

Thursday, April 25

Thursday, May 30

Thursday, June 13

For additional information on the next meeting phone 416-274-2540 or email: Ken-dante.msn@attcanada.net or gheintzman@sympatico.ca

Note: The Joseph R. Benedetto Scholarship

The Application Form for the Joseph R. Benedetto Scholarship is now available on the chapter web site at www.sme-toronto-26.org.

PROGRAM COMMITTEE

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Our continuing thanks to Professor Mark Fox, U of T, for hosting the Chapter's web site on his server at <http://www.novator.com>

Employment Opportunities - Energy

In a previous issue I said that when news is on the cover of a national magazine it's old news. I also said that within a 10 year time-frame, energy represents a tremendous employment opportunity.

Well it's official. The Jan/Feb issue of MIT's Technology Review is devoted to ENERGY. See for yourself at <http://www.technologyreview.com/>

Some of the articles cover: how cheap oil has strangled energy innovation; new approaches to solar power; new designs for atomic reactors; how much fossil fuel is there anyway; changes to the electricity grid; wind power and the problem of energy storage; Denmark gets 10% of its energy from wind, <http://www.technologyreview.com/articles/heltzell110201.asp>; how much natural gas there is and where it's located; the future impact of fuel cells on electricity grids and cell phones.

What I found interesting is that the whole issue was devoted to the production and sources of energy. Many of these articles deal with the production of energy as electricity. If energy sources change that much there will be equal opportunities for employment on the consumption side.

All of this presents new opportunities. Plan ahead and position yourself to take advantage of these changes.

George Heintzman
gheintzman@sympatico.ca
Past Chair

Tooling for High Speed Machining, Tyson Tool, Jan 9

Tom Walton of Tyson tool gave us an excellent talk on January 9, 2002. Thanks Tom!

He defined high speed machining (HSM) as spindle speeds over 8000rpm. He described experiments in Germany at 500,000 rpm.

He said the improvements in machining time were often of the order of 8 to 1. There is a complicated test part, called the Mercedes Test Part because they created it, which is becoming an industry standard. The first time it was machined it took several minutes. One manufacturer recently cut the whole thing in 13 seconds.

One of the keys to attaining this potential is balanced tooling. Unbalanced tools will cause vibration which will destroy the spindle bearings and give a poor surface finish. The tool must be balanced in its collet in its tool holder. Every time the inserts are adjusted the tool must be rebalanced.

Tom pointed out that the traditional CAT tool holders grip the tool on the outside and that over 8000rpm these jaws tend to fly apart and not hold the tool properly. With the HSK holder the attachment is much more rigid and the tool is held by jaws on the inside. As the rpm increases the tool is held more tightly. Rigidity, accuracy, and balance become more critical as rpm increases.

For the tool to do its job, the whole system must be capable of this performance:

The machine must be able to run at the feed rate required (often over 600 ipm) The machine must be able to withstand

see HSM - continued on page 4

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Treco
High Precision Machining

... Tooling for HSM Tyson Tool

HSM - continued from page 3

the acceleration. The tools must be accurately set, must have the correct cutters for the application, must have the correct coolant, venting and vacuum systems for dust and mist, chip removal must be able to handle the new increased volume of chips, and the CAM software must provide a path that ensures a light, continuous, even load on the tool or things will start to break with catastrophically spectacular results. Path reversal may be best executed out of contact with the part and verification software may have to simulate the momentum of the machine to ensure the machine is capable of the accuracy required. The block reader on the machine tool must be able to keep ahead of the blizzard of information at these high speeds.

For these reasons retrofits often do not work very well. In addition, in order to achieve the benefits of HS machining, everybody involved with an HSM system must be trained. Tom said that really straight training was not enough. The team has to adapt a whole new philosophy. Some of the people involved are:

- Operators
- Tool setters
- NC programmers
- Purchasing
- Estimating
- Production scheduling
- Sales
- Management

In summary there is a huge potential but it is not just a small incremental change. To realize this potential requires that the implementation team understand all aspects and implications of the technology.

Great talk. Thanks Tom.

George Heintzman
gheintzman@sympatico.ca
Past Chair

NB: Please - Update Your Information

UPDATE YOUR INFORMATION

Please check that your information in the SME headquarters database is correct!

Phone (toll free): 1-800-733-4763

Website: <http://www.sme.org/>

You can renew your membership on line by clicking on "Renew Membership" in the Member Services section.

What is SME Certification?

Certification through SME's Manufacturing Engineering Certification Institute (MECI/SME) is a program of professional documentation and recognition of an individual's manufacturing-related knowledge, skills, and capabilities. Go to: <http://www.sme.org/> and follow the link (under "Directory" in the left column of the home page) to the Certification page to learn more.

Test your knowledge! Here are some sample questions from the Technologist level. Go take the test and score yourself!

- The diameter of an aluminum piston is measured to be 2.0002'' as it comes out of a lathe. If the piston temperature is 80°C when measured, what will be its diameter at room temperature (20°C): 1.9972'', 1.9992'', 2.0000'', 2.0032''?
- Which of the following is NOT considered a thermoplastic engineering resin: Nylon, Elastomer, Acetal, or Polycarbonate?
- Stereolithography, laminated object manufacturing, fused deposition modeling, and selective laser sintering are all examples of: finite element modeling, laser modeling, ballistic particular manufacturing, or rapid prototyping?

There are self-test examples at various levels, study resource packages, home study programs, sign up for Certification exams, and lots more of interest on this page. Check it out!